LISTING OF THE CLAIMS

1.   (Previously presented) A method of determining a line pattern or a space on a sample, comprising the steps of:

scanning a sample including line and space patterns with a charged particle beam;

forming a profile waveform based on charged particles emitted from the scanned portion of the sample;

forming a derivative waveform of said profile waveform;

acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;

determining the positions of line and space patterns based on a comparison between the magnitudes of said evaluation values acquired from said positive and negative peaks;

determining a target location for measurement of said sample based on the determined positions of said line and space patterns; and

measuring said sample.

2.   (Previously presented) A method of determining a line pattern or a space pattern on a sample, comprising the steps of:

scanning a sample including line and space patterns with a charged particle beam;

forming a profile waveform based on charged particles emitted from the scanned portion of the sample;

forming a derivative waveform of said profile waveform;

acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;

comparing for each peak of said profile waveform, the magnitudes of said two evaluation values acquired from said positive and negative peaks;

determining a portion of a profile of said derivative waveform, which corresponds to a larger evaluation value of the two evaluation values acquired from said positive and negative

peaks, to be a convex portion, and determining a portion of the profile of said derivative waveform, which corresponds to a smaller evaluation peak of the two evaluation values acquired from said positive and negative peaks, to be a concave portion;

determining a target location for measurement of line and space patterns based on said concave and convex portions that have been determined for each peak of said profile waveform; and

measuring said sample.

3. (Previously presented) The method of determining a line pattern or a space pattern on a sample according to claim 1 or 2, wherein the charged particle beam is incident on the plane of a substrate perpendicularly.

4. (Previously presented) The method of determining a line pattern or a space pattern on a sample according to claim 3, wherein said profile waveform is created based on a charged particle emitted from a location of said sample that has been scanned as the charged particle beam that is perpendicularly incident on the sample is scanned by a scanning deflector.

5. (Previously presented) The method according to claim 2, wherein the position of a pattern on said sample is identified based on the information about the concave and/or convex portions that have been determined.

6. (Previously presented) The method according to claim 1 or 2, wherein a convex-concave pattern formed on a substrate is scanned by a charged particle beam, a profile waveform is created based on a reflected or secondary charged particle emitted from a scanned location, and a specific position of said pattern on said substrate is detected based on pattern convex-concave information obtained by said method of determining a line pattern or a space pattern on a sample.

7. (Previously presented) The method according to claim 6, wherein a comparison is made with concavity-convexity information about a pre-registered model, in order to detect a specific position on said pattern on said sample.

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8.   (Previously presented)   The method according to claim 6, wherein a comparison is made with the profile shape of a pre-registered model, and an error is detected if an evaluation value indicating the difference in their profile shapes exceeds a predetermined value.

9.   (Previously presented)   The method according to claim 6, wherein a comparison is made with the number of edges in a pre-registered model, and an error is detected if the numbers of edges exceed a predetermined value.

10.   (Previously presented)   A method of determining a line pattern or a space on a sample, comprising the steps of:

scanning a portion including an edge of line pattern on the sample including a plurality of convex and concave patterns formed thereon with a charged particle beam;

forming a profile waveform based on charged particles emitted from the scanned portion of the sample;

forming a derivative waveform of said profile waveform;

acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;

determining the positions of line and space patterns based on a comparison between the magnitudes of said evaluation values acquired from said positive and negative peaks;

determining a target location for measurement of said sample based on the determined positions of said line and space patterns; and

measuring said sample.

11.   (Previously presented)   A charged particle beam apparatus comprising:

a charged particle source,

a scanning deflector for scanning a charged particle beam emitted by said charged particle source,

a detector for detecting a charged particle emitted by a sample irradiated with said charged particle beam, and

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a control processor that comprises:

a profile waveform forming means for forming a profile waveform of a portion of the sample that has been irradiated with a charged particle beam based on a detection output of the detector;

a derivative waveform forming means for forming a derivative waveform based on the formed profile waveform;

an acquiring means for acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;

a determining means for determining the positions of line and space patterns based on a comparison between the magnitudes of said evaluation values acquired from said positive and negative peaks; and

a determining means for determining target locations for measurement of said sample based on the determined positions of said line and space patterns.